
Two New Species of *Cladocolea* (Loranthaceae) from Mexico and Surinam

Job Kuijt

Missouri Botanical Garden, and (mailing address) Department of Biology, University of Victoria, Victoria, V8W 2Y2, Canada

ABSTRACT. *Cladocolea racemosa* and *C. elliptica* are illustrated and described as new. The former, Mexican species is unique in the genus in having progressive indeterminate inflorescences, and highly unusual in having pedicellate flowers. The latter, Suriname species also has an indeterminate inflorescence, but is closely related to *C. micrantha*.

Since my monograph of *Cladocolea* (Loranthaceae) (Kuijt, 1975), the circumscription of the genus has changed through the publication of new entities (Kuijt, 1981, 1987a, 1987b), the removal of some to the genus *Ixocactus* (Kuijt, 1991b), and the inclusion of species from the genus *Phthirusa* (Kuijt, 1991a). I originally visualized the genus as being characterized by determinate inflorescences, though even then a few clearly derived species had inflorescences that aborted terminally; and by flowers that were arranged in monads on inflorescences and were ebracteolate.

The two new species violate both of these major generic characters: *P. racemosa* has a truly indeterminate inflorescence, and *C. elliptica* has at least some bracteolate triads at the base of an indeterminate inflorescence. In both cases, however, the alliances to the main body of *Cladocolea* seem beyond question, and these modified characters are regarded as derivative.

***Cladocolea racemosa* Kuijt, sp. nov. TYPE:** Mexico. Guerrero: 2.5 km al WNW de Tlaxco, camino de Tototepec a San Miguel Amoltepec, bosque de pino, ladera de exposición S. colgante parasito de *Pinus*, 2,100 m, 28 Mar. 1982, Lorea 1955 (holotype, FCME; isotypes, LEA, WIS). Figure 1.

Plantae delicatissimae, graciles, pendulae, probabiliter dioeciae, solum masculae visae. Folia usque ad 60 × 4 mm, angustissime lanceolata. Inflorescentiae staminatae axillares, singulae, indeterminatae, racemosae, prophyllis binis crassis suffultae, floribus binis, pedicellatis, ebracteolatis 10–14; bractea suffulciens cum pedicello non coalita. Flores hexameri: petala staminaque dimorpha; antherae sessiles; sacculi polliniferi 4, connectivum in cornu prominens protractum.

Extremely delicate and slender, glabrous plants, the leaf-bearing stems 1 mm or less thick, terete, sparsely branched, possibly sympodial. Leaves paired, to 6 cm long and 4 mm wide, very narrowly lanceolate, tapering into a slender petiole ca. 7 mm long, venation not evident except for the midrib, which runs into the apiculate apex. Probably dioecious, only the staminate seen. Inflorescence one per axil, indeterminate, subtended by two distinctive, thick, blunt, pink to purplish prophylls less than 0.5 mm long, and becoming at least 3–4 cm long in anthesis, racemose, bearing 10–14 paired, pedicellate flowers, the bracts 1 mm long, ovate, with rounded apex, caducous, completely free from the pedicels, which become 2.5 mm long and are deeply constricted just below the ovary in anthesis. Flower bud at least 5 mm long, one-third of which is an ovary with inconspicuous, smooth calyculus; petals 6, dimorphic, ca. 3 mm long; anthers 2 mm long, in 2 series, both series completely sessile, attached to the petal in the middle of the abaxial surface, a median ridge present below each anther; pollen sacs 4, the connective extended into a minute terminal horn; style 1.5 mm long, slender, straight, somewhat expanded just above the ovary, stigma poorly differentiated.

This is perhaps the most anomalous species of *Cladocolea*, and it could be argued that a distinct genus should be erected for it. I prefer to maintain it in *Cladocolea*, even though this placement clashes with one major element of the current circumscription of the genus. This divergent feature is the *progressive* indeterminacy of the inflorescence. There exist several other species in the genus which, technically, also have indeterminate inflorescences, but the situation is different there in that all flowers mature more or less simultaneously, e.g., *C. coriacea* Kuijt (Kuijt, 1987a); *C. cupulata* Kuijt, *C. mcvaughii* Kuijt (Kuijt, 1975); *C. biflora* Kuijt (Kuijt, 1981). Considering that the terminal flower in most *Cladocolea* species tends to be the first to mature, the simultaneous maturation of all flowers may be seen as a transitional feature to true indeterminacy. In *C. racemosa*, progressive indetermi-

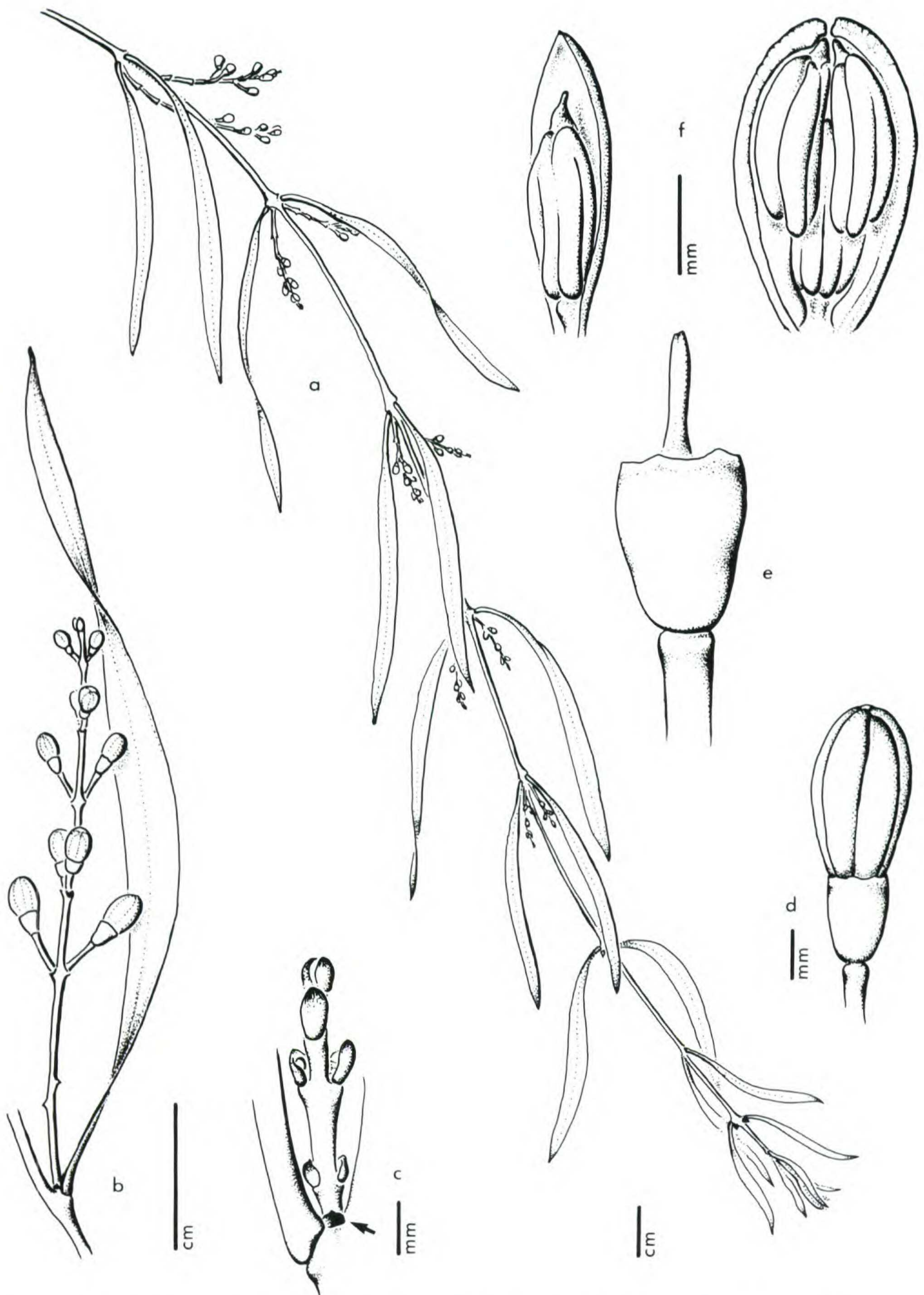


Figure 1. *Cladocolea racemosa* Kuijt. —a. Habit. —b. Mature inflorescence. —c. Young inflorescence with caducous bracts and (arrow) prophylls. —d. Mature flower bud. —e. Ovary and style. —f. Petals and anthers. (Lorea 1955, LEA.)

nacy is fully realized: the lowest flowers mature while the apex of the inflorescence is still forming new flowers. There is no other *Cladocolea* species for which this is true; in several related genera such as

Struthanthus, *Oryctanthus*, *Oryctina*, and *Phthirusa*, this condition is the rule (Kuijt, 1980).

Curiously, there is entomological support for placement in *Cladocolea*: the plant bears a couple

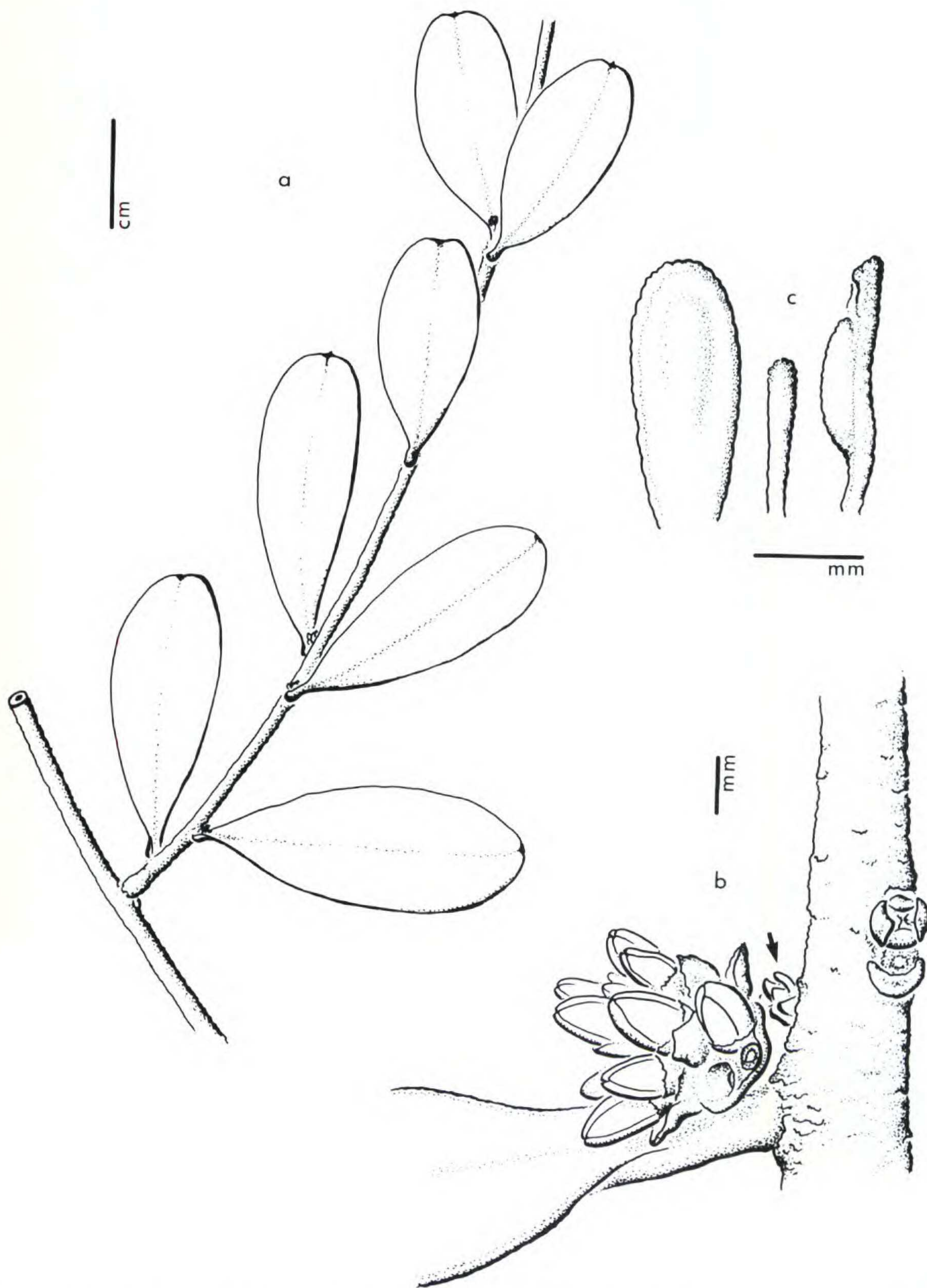


Figure 2. *Cladocolea elliptica* Kuijt. —a. Habit. —b. Mature inflorescence, with young superposed inflorescence bud (arrow). —c. Petals and style. (Irwin *et al.* 57535, P.)

of small, galled flowers exactly like those I noted years ago for a male plant of *C. loniceroides* (Kuijt, 1975, fig. 22d), also a Mexican endemic.

Two more, highly unusual features are the pedicellate flowers and the placement of their bracts directly on the inflorescence axis, rather than fused on the pedicel, thus the long pedicels are left completely free. *Cladocolea* is otherwise characterized by sessile flowers in all but *C. coriacea* Kuijt (Kuijt, 1987a), *C. harlingii* Kuijt, and *C. pedicellata* Kuijt

(Kuijt, 1975). In the last two of these species, the pedicels also are free from the bracts, even though those of the lowest flowers in *C. pedicellata* are fused with the inflorescence axis, instead. None of these species appears to be closely related to *C. racemosa*. Beyond *Cladocolea*, free pedicels are rare in Loranthaceae (Kuijt, 1980), probably being limited to several New Zealand species and the median triad flowers of some American inflorescences in *Struthanthus*, *Tripodanthus*, and *Psittacanthus*.

Notwithstanding its unusual features and the large geographical distance involved, *C. racemosa* appears to have some affinity to *C. harlingii* Kuijt of southern Ecuador and northern Peru (the latter range extension is based on a recent new record from Prov. Lambayeque, Dept. Lambayeque, Procedencia Colaya, 1,400 m, *S. Llata Quiróz 2002*, LEA). That species has evolved a remarkable, leaf-mediated mode of parasitism (Kuijt, 1975), of which there is no evidence in *C. racemosa*; and its inflorescence is determinate. Other inflorescence features, however, are very similar. *Cladocolea harlingii* thus far has not been considered closely related to any other species of *Cladocolea*.

My suggestion of dioecy is based on the unusually large anthers and, conversely, the insignificant style and stigma. Neither criterion is reliable, however, and further material is needed to confirm the point. Surprisingly, the pollen is not mature in these large anthers.

Cladocolea elliptica Kuijt, sp. nov. TYPE: Suriname. Wilhelmina Gebergte, Zuid Rivier, in savanna and disturbed areas, Kayser Airstrip, 45 km above confluence with Lucie Rivier, 270 m, on shrubs 1–4 m above ground, *Irwin, Prance, Soderstrom & Holmgren 57535* (holotype, P; isotypes, BBS, NY). Figure 2.

Partes novellae leviter furfuraceae; phyllotaxis irregulariter decussata-alterna; folia usque ad 30 × 8 mm, anguste lanceolato-elliptica, apice plus minusve rotundata. Planta dioecia, typus pistillatus. Inflorescentiae minusculae (4–5 mm), sessiles, in glomerulis, quoque paribus triadum singulis vel duabus et monadis singulis vel duabus ebracteolatis, indeterminatae; apex abortivus parvus, applanatus, cuneoliformis. Flores tetrameri; petala 1 mm longa, dimorpha; flos pistillatus ut videtur antheram sterilem carens.

Plants lightly scurvy on young parts and inflorescences, phyllotaxy irregularly decussate-alternate, leaves from 4 × 1.5 cm (lower part of innovations) to 20 × 8 mm (upper part of innovations), narrowly lance-elliptic, apex rounded to mucronate-

apiculate, only the lower midrib evident but venation probably pinnate; dried leaf surface strongly granular, perhaps indicating sclereid clusters in mesophyll. Dioecious, the type female. Inflorescences extremely small (4–5 mm), sessile, 1–3 per leaf axil, the 2nd and 3rd superposed slightly gray-furfuraceous, made up of 1 or 2 pairs of triads followed by 1 or 2 pairs of ebracteolate monads, indeterminate, the aborted apex forming a flat wedge between the two most distal monads. Flowers 4-merous, petals 1 mm long, dimorphic, each with oblong median cushion but apparently without sterile anther; style 0.5 mm, clavate, stigma weakly differentiated.

Cladocolea elliptica is closely related to *C. micrantha*, but very different in leaf appearance and furfuraceous surfaces of young parts and inflorescences, especially the indeterminate inflorescence. It shares with *C. micrantha* the aberrant feature of having bracteolate triads in the lower part of the inflorescence, tetramery, and a very similar general appearance.

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